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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY

FOREST INSECT INVESTIGATIONS

FOREST INSECT SURVEY

EASTERN PLUMAS WORKING CIRCLE

Season of 1933

by

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U.S.Bureau of Entomology

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FOREST INSECT SURVEY
EASTERN PLUMAS WORKING CIRCLE
Season of 1933

Introduction

In the summer of 1930 a one man survey of forest insect conditions in the east side type of the Plumas National Forest was made by Salman and a report was submitted in August of that year (1). Although attempts were made to run strips and traverses as well as to cruise small sample plots for insect-caused losses, the results of that work can be considered only of a general nature. Since 1930 no detailed surveys have been made of the area although one or two days have, as a rule, been spent in making a general reconnaissance of forest insect conditions.

In 1933, in connection with the ECW program, it was possible to start systematic work in the Plumas as a part of a program leading to the sampling of forested areas and of securing reliable seasonal data on the trends of and losses caused by insect infestations. It is hoped that this start will be followed by surveys that will be extended to cover the entire east side of the Plumas and include surveys of cutover lands which are becoming an important element in the management of the east side timber stands. Little is known of the activities of insects in the reserve stands on cutover lands in this type of forest and the opportunity should not be allowed to pass.

Methods

In 1930 the area was divided provisionally into entomological units that, in general, agree with the logging compartment boundaries. These units have been changed slightly this year due to a more intimate knowledge of conditions and stands. The units considered are shown on the map accompanying this report.

Information concerning insect losses was secured by a 100 percent cruise of losses on five 320 acre plots and six traverses ten chains in width and from four to six miles in length. On the basis of these samples, tempered with knowledge of conditions in various parts of the individual

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1. Salman, K.A., Report of a Preliminary Survey of Insect Conditions in the East Slope Type of the Plumas National Forest, Calif. August 28, 1930.

units, it has been possible to furnish estimates of the losses for the past and current seasons. Losses of the current season were modified by use of a date correction factor to allow for the incomplete infestation present at the time of cruising.

General Infestation Conditions

Extremely low temperatures existed during at least two periods of the 1932 winter season. Weather Bureau records showed minimum temperatures of -18 degrees F. at Sierraville, -25 at Doyle and -20 at Portola. However, these low temperatures resulted in less change in the infestation than was expected due to the fact that a large proportion of the stands in the eastern Plumas is composed of jeffrey pine and that the jeffrey pine beetle apparently did not suffer greatly from the low temperatures.

In many of the units general endemic infestations continued. In others, however, infestations that had been considered heavy, but more or less normal for the poor sites on which they were found, were shown to be more than endemic. The fact that the areas in which these localized heavy losses were found were noted in 1930 to be relatively heavily infested is some indication that site conditions may be a predominant factor in the continuing losses.

The composition of the infestations in the several units differs directly with the amount of ponderosa or jeffrey pine in the stands. The jeffrey pine beetle is the most important insect in the area with flat head borers second in importance. The western pine beetle, although the most important insect in ponderosa pine infestations is distinctly secondary in importance in this area. During the past season infestation by mixed species caused a greater than normal portion of the losses.

Timber Losses

Table I shows the plot and cruise strip losses on a per section basis in terms of trees and board feet of timber destroyed. The locations of the plots and strips are shown on the map accompanying this report.

Average estimated loss per section in the Bass, Last Chance, Ferris, Squaw Valley and Dixie Units, the only ones on which a basis sufficient for estimate has been

secured, appears in table II. In addition this table gives the timbered acreage in each unit, the estimated seasonal losses for 1932 and 1933 and the average estimated loss per acre. The losses per section are shown graphically for each unit in plate I and indications of the trends in the various units are illustrated.

Infestation and Trends

Bass Unit.- There is little need of discussing losses in this unit from a control standpoint for the infestation is endemic. The only trend noticeable is that illustrated by the increase in the average volume of infested trees. This trend usually is considered indication of a return to normal endemic infestation conditions.

Last Chance Unit.- Apparently a relatively heavy normal loss is to be found over a large portion of this unit. West of Squaw Canyon losses can be considered endemic but east of that area they are of considerably more importance. The heaviest infestation in the unit is centered in the poor quality timber in the Willow Creek Basin. Trends in the unit have, with the exception of the Willow Creek Unit, been downward as concerns the numbers of trees infested per section, but upward in the average tree volume.

If utilization of the timber were imminent it would appear that control of a large area in the eastern portion of the unit would be feasible. With utilization fifteen or more years in the future, there would be no basis for recommending treatment except for the Willow Creek basin in which losses in jeffrey pine may be considered epidemic.

Ferris Unit.- Although losses throughout the unit have been somewhat reduced during this season, the normal loss appears to be enough to cause a net reduction of timber in the area. Of the several portions of the unit, the Willow Creek area is the only one in which an infestation of epidemic nature warrants a recommendation of control.

Squaw Valley Unit.- In general, losses in this unit, although high, are of an endemic type.

Dixie Valley Unit.- The sample of this unit shows a marked increase during the current season. However, it is known that the sample is representative of but about a third of the area. Examinations in 1930 evoked the statement that the heavy losses were the result of poor site conditions.

Undoubtedly the normal rate of loss is high, but indications are that, over a third of the area at least, losses are much greater than normal.

Control Recommendations

Of the entire area surveyed, the Dixie Valley and the Willow Creek areas are the only ones for which control might be considered on the basis of current losses.

In the Dixie Valley Unit it would be necessary to cover all except the higher elevations and the project would reasonably include about two thirds of the unit. Estimated number of trees to be treated would be 1550 at a cost, under NIRA wage scales of about $10,000. This cost, which is exceptionally high is based on a 40 hour week and 30 man camp expenses of $4,000 per month. Estimated per tree cost is $6.50 and per M cost $4.00. This area would have excellent project boundaries.

The Willow Creek area would have less satisfactory boundaries, low ridges, beyond which are relatively heavy infestations, being the only breaks. An area of about 14½ sections, as shown on the map, could be utilized as a project area. It is estimated that the total cost of this project on the NIRA wage scale would be $7,600.

In both these projects Dendroctonus jeffreyi in jeffrey pine is the chief cause of the loss. Because of this, it would be possible to treat the greater number of the trees without use of fire. Burning would be necessary only where the insects had reached the pupal stage or when other insect species were involved in the infestation of individual trees.

In spite of the heavy infestations, not only in the areas for which control is considered, but in rather extensive areas outside the project boundaries, we do not feel that we can present an unqualified recommendation of insect control under the circumstances existing in this as well as in most other east side type areas. The question is not one tied up primarily with insects and insect infestations, but is related directly to the management of the stands and the future policy. We feel that an unqualified recommendation at this date would obligate and probably necessitate continued recommendations year after year until the timber is harvested.

In the case of the recent infestations in the east side Plumas the average per section losses cruised in the sample of the 93,380 acres involved in the area were 81 trees, 71,042 B.M. in 1932 and 71 trees, 77,087 B.M. in 1933. In these timbered acres, probably not running greatly in excess of 15,000 B.M. per acre, the high losses, although not constituting a basis for the conclusion that epidemic infestations are general throughout the area, are severe enough to raise several questions.

Of these the question as to whether or not these losses are merely temporary high levels is important. We have no past cruises in this area on which to base an opinion of the past and no possible means of insight into the future. We do know, however, that in the Modoc National Forest since 1922, as great or greater losses have been the rule rather than the exception. In addition we know that more nearly comparable stands in the Lassen National Forest have suffered a similar heavy loss since 1926. The question as to whether losses of over 100 B.M. per acre per year are to continue is unanswerable, just as is the question as to the basic cause of the unusual amount of insect activity. Those who have been close to insect activities in the east side type stands have had little hesitation in pronouncing overmaturity and climatic factors the logical causal agents, but factual proof and satisfactory correlation has been impossible to secure. However, it seems logical to conclude that, whatever the factors - if they remain operative, heavy insect caused losses will continue.

The question as to what must be done, also is necessary to answer, not only in relation to the east side stands in the Plumas but to east side stands and marginal mature or overmature stands in general throughout the region. It has been proven that insect control projects are valuable means of combatting temporary flareups of insect activity. They do not, however, furnish a satisfactory means of preventing the diminution of the cash values of forested areas through the constant attrition and heavy loss associated with typical and possibly normal insect activity in marginal stands under existing growing conditions. It is plain that existing forest insect control measures are alleviatives but that they do not remove the basic causes of infestation. As such they are not sufficient for continued use against infestations considered to be caused by " poor site conditions" for lack of sufficient proof to pin the cause of the loss more definitely. In particular it cannot be said that continued treatment of east side stands having a high normal loss is economically sound when treatment costs on the average about $.65 per acre per treatment. Some method other than our insect control methods of today must be found.

One cannot prescribe other more effective artificial control measures for they do not exist at the present time. Similarly we have no means of changing the climatic factors that are believed to be the basic cause of the continued losses. Apparently the only method within our power for reduction of losses and checking of depreciation or at least for salvage of the values of our overmature timber, is utilization by salvage logging. Without utilization on a salvage basis, the past has made it exceedingly clear that our present values will have to be written off as uncompensated depreciation. Although there is no certainty that, even with logging, the logged areas will continue as timber producing areas in the centuries to come, at least it can be ascertained that the best conditions possible for such a continuance are made available through reserves and reproduction left on the ground.

TABLE I

PLOT AND STRIP LOSSES - PLUMAS NATIONAL FOREST

Per Section Basis

Map No.	Location T.	R.	Sec	1932 Trees	1932 Vol.B.M.	1933 Trees	1933 Vol.B.M.	% Inc.	% Dec.
1	26	14	13	94	59,740	46	45,000		24.7
2	25	14	11-18	200	203,700	208	203,200		0.3
33	26	13	16	24	42,440	20	36,800		13.3
4	24-25	14	1-36	64	57,080	130	206,200	261.2	
5	25	13	14	78	81,940	58	76,000		7.2
6	26	14		101	77,500	74	66,010		14.8
7	26	14		99	67,090	67	53,220		20.7
8	26	13		85	73,720	33	37,210		49.5
9	26	13		39	33,190	32	42,130	26.9	
10	25	13		36	28,060	39	30,030	7.0	
11	25	14		71	57,000	74	52,160		8.5

TABLE II

UNIT LOSS ESTIMATES

Unit	Timbered acreage	Per Section Losses 1932 Trees	Per Section Losses 1932 Vol.B.M.	Per Section Losses 1933 Trees	Per Section Losses 1933 Vol.B.M.	Unit Losses 1932 Trees	Unit Losses 1932 Vol.B.M.	Unit Losses 1933 Trees	Unit Losses 1933 Vol.B.M.	Difference % Inc.	Difference % Dec.
Bass	14,660	30	37,820	26	39,460	690	866,000	600	903,600	4.0	
Last Chance	23,260	88	69,870	53	49,950	3,190	2,536,300	1,920	1,813,200		28.5
Ferris	19,200	120	95,730	87	84,550	3,600	2,871,900	2,610	2,536,500		11.7
Squaw Valley	20,230	62	55,670	57	52,730	1,960	1,759,200	1,800	1,666,300		5.3
Dixie Valley	15,940	43	42,810	97	154,650	1,330	1,328,800	2,415	3,850,800	191.1	
Totals	93,380					10,770	9,356,200	9,345	10,770,400		
Average per acre						0.12	100.2	0.10	115.3		

EASTERN PLUMAS WORKING CIRCLE

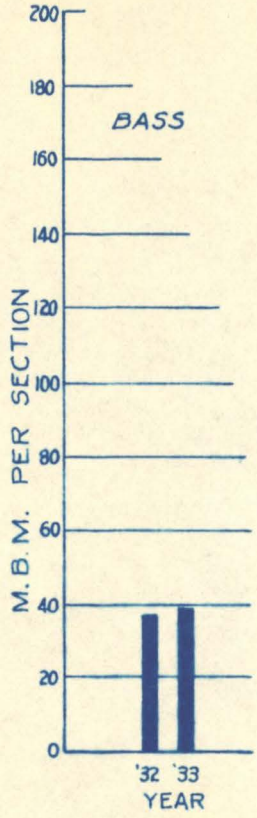
PLUMAS NATIONAL FOREST

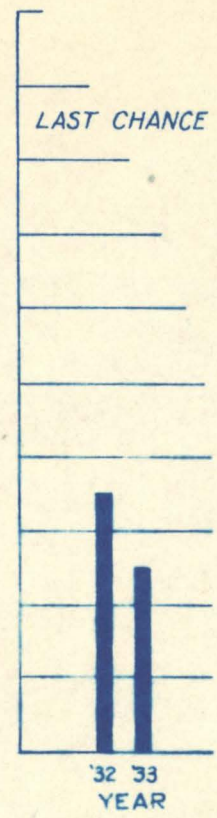
CALIFORNIA

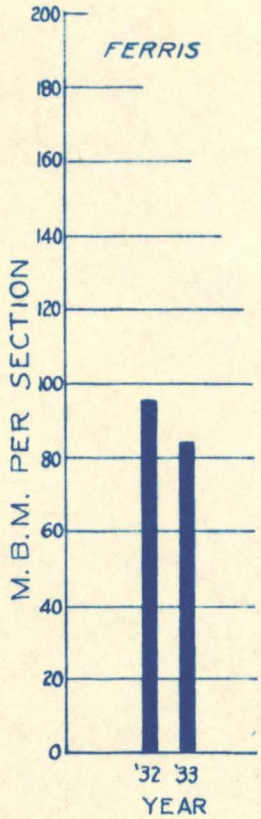
INSECT LOSSES

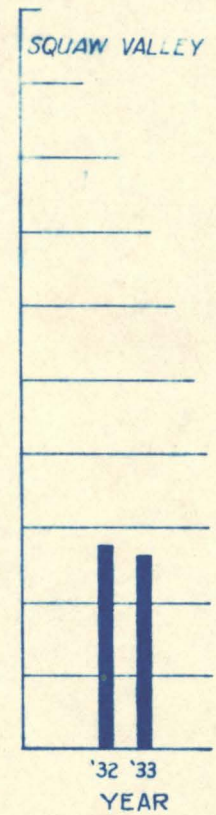
1932 - 1933

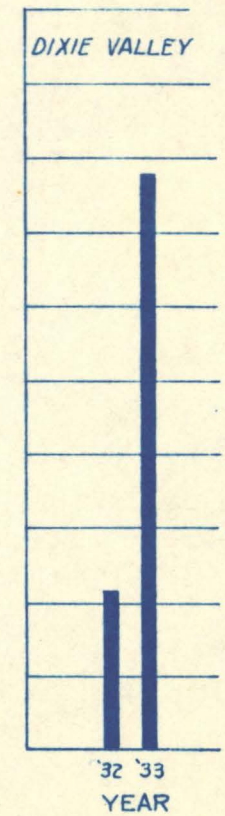
ANNUAL M.B.M. LOSSES PER SECTION BY UNITS

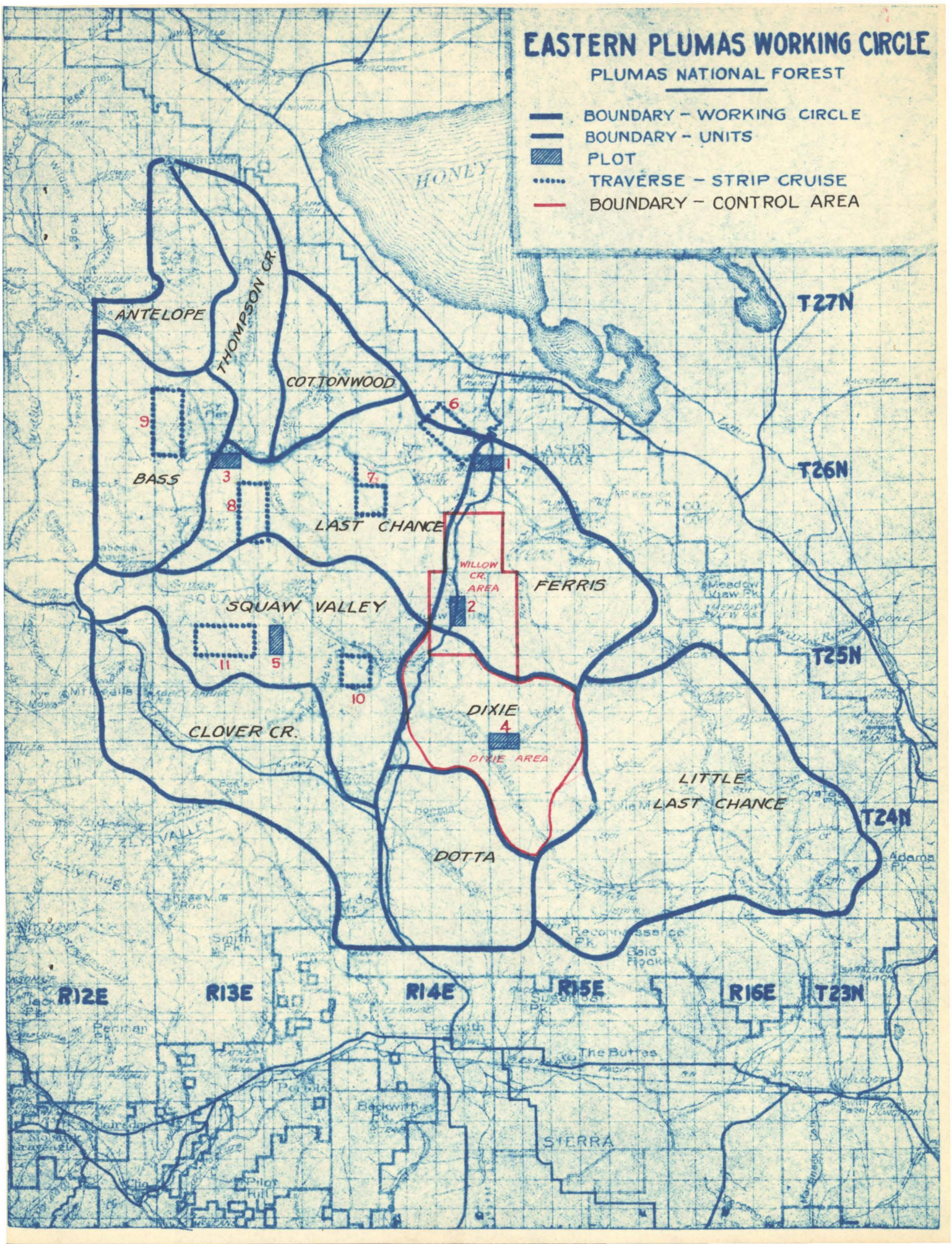











EASTERN PLUMAS WORKING CIRCLE
PLUMAS NATIONAL FOREST
BOUNDARY – WORKING CIRCLE
BOUNDARY – UNITS
PLOT
TRAVERSE – STRIP CRUISE
BOUNDARY – CONTROL AREA
HONEY
ANTELOPE
THOMPSON CR.
COTTONWOOD
BASS
LAST CHANCE
WILLOW CR. AREA
FERRIS
SQUAW VALLEY
CLOVER CR.
DIXIE
DIXIE AREA
LITTLE LAST CHANCE
DOTTA
SIERRA
T27N
T26N
T25N
T24N
T23N
R12E
R13E
R14E
R15E
R16E
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